

APPENDIX C.

Availability Survey

This appendix describes study team steps to determining MBE/WBE availability for transportation construction and engineering work in Idaho. It expands on the analysis presented in Section II.

Overall Approach

The study team completed two phases of calling to firms for its availability survey. The first phases of calls were conducted by BBC staff to firms listed in a variety of ITD databases as having worked for previous prime contractors, subcontractors or bidders on ITD contracts. This phase of the survey included firms inside and outside Idaho.

For the second phase of the availability survey, BBC contracted with Customer Research International (CRI) to contact other Idaho, Eastern Washington and Northern Utah businesses potentially related to the transportation construction and engineering industry. The business establishments that CRI contacted were those listed under primary fields closely related to transportation construction and engineering in the D&B business directory. Only business establishments located in the relevant geographic market area were included in the second phase of the survey. The study team attempted to contact every listing rather than draw a sample of listings from D&B.

Combined, BBC and CRI attempted to reach 9,042 business listings. The study team completed surveys with 3,058 business establishments. After screening for qualifications and interest in future transportation construction and design work, and other factors, BBC was able to analyze MBE/WBE availability based on a database of 1,296 firms.

Sample Frame

BBC identified firms for the first phase of the availability survey from ITD contract and program data (the number of firms contacted from each source are listed in parentheses):

- Bidders list (884);
- CAMS database (632); and
- PATS database (278).

BBC matched firms to Dun & Bradstreet (D&B) business profile information using telephone numbers and addresses found within each data source. BBC also attempted to contact firms that D&B could not match if the firm had complete contact information. If a firm had partial or incomplete contact information, BBC searched for phone numbers and addresses using company websites or online telephone directories. BBC surveyed as many firms as possible, given phone number and other contact information availability. In total, BBC attempted to contact 1,086 firms using BBC staff.

For the second phase of the availability survey, BBC developed a sample frame based on a D&B database of establishments doing business in the relevant geographic market area. The study team determined business specializations that accounted for most transportation construction and engineering work. BBC then identified the 8-digit Standard Industrial Classification (SIC) codes best corresponding to that work. D&B provided the list of firms in Idaho, Eastern Washington and Northern Utah with primary lines of business within those SIC codes. Only those firms not already included in the lists of firms provided by ITD were contacted in this phase of the availability research.

The study team did not expect every firm in these lines of business to be available for transportation construction or engineering work. In some fields, we anticipated that relatively few firms would perform this work. In the same vein, the study team did not design the survey effort so that each firm possibly performing transportation construction or engineering work would be called as part of the survey. To do so would require including business sectors marginally related to transportation construction and design. Some firms within the core lines of work encompassed in the survey are also either missing from the D&B database or might not respond to the survey effort. Finally, only establishments from the D&B list located in the relevant geographic market area locations were included in the survey.

For these reasons, the survey is not a complete census of all firms possibly available for transportation contracting work in Idaho. The study team's objective was to develop unbiased estimates of the relative availability of MBE/WBEs among firms doing business in Idaho within the lines of work principally involved in transportation contracting.

Identifying the relevant subindustries for ITD transportation contracting. BBC determined the types of firms involved in ITD transportation construction and engineering services by reviewing firms listed in ITD databases for construction and design contracts. The study team further supplemented this effort to identify relevant SIC codes by examining the results from the first phase of the availability survey (in-house calling) and noting additional relevant fields with firms reporting qualifications and interest in transportation construction and engineering.

In categorizing firms as to their primary industry, BBC used 8-digit SIC codes developed by D&B. The 8-digit codes provided definitions of firm specializations that are more precise than the 4-digit SIC codes or the NAICS codes that have been prepared by the federal government.

List of establishments to be contacted. Each business establishment with the corresponding SIC code in the relevant geographic market area for which D&B had a phone number was included in the list purchased from D&B. There was no "sampling" of business establishments from the D&B list.

Because D&B organizes its database by "business establishment," not by "firm," BBC purchased the business listings in that fashion. Therefore, multiple Idaho locations for a single firm were obtained in the list of establishments to be called. The study team attempted to contact each establishment by telephone. (BBC's methods for consolidating information for multiple establishments into a single record for a firm are described later in this appendix.)

Questionnaire Development

Development of survey instrument. The study team drafted a telephone survey to collect business information from transportation construction and engineering firms. Before this survey was used in the field, ITD staff reviewed the survey instrument, and it was tested in a pilot survey. The basic survey document for construction firms is provided at the end of this appendix. The survey was slightly modified for certain groups of firms based on line of work in order to use the terms commonly employed in those fields. For example, the words “prime consultant” and “subconsultant” were substituted for “prime contractor” and “subcontractor” when surveying engineering-related firms.

A fax version of the survey was also developed. This version was faxed or e-mailed to firm owners or managers initially contacted by telephone who requested that a survey be faxed or e-mailed to them. They then returned the survey to BBC via fax or e-mail.

Survey structure. The telephone and fax/e-mail surveys included the following sections. Note that each area of questions was asked of all firms. Interviewers did not know ownership status when calling a firm. (The survey instrument is reproduced in its entirety at the end of this appendix.)

Identification of purpose. The survey began by identifying the Idaho Transportation Department as the survey sponsor and describing the purpose of the study (identifying firms doing transportation construction or engineering work in Idaho).

Verification of correct firm name. The interviewer verified that he or she had reached the correct business, and if not, inquired about the correct contact information for that business. When the firm name was not correct, interviewers asked if the respondent knew how to contact the company. The BBC study team followed up with the desired company based on the new contact information (see areas “X” and “Y” of the Availability Survey).

Performance of transportation construction or engineering work. Firms were asked, “First, I want to confirm that your firm does work related to transportation construction, maintenance or design. Is this correct?” Interviewers continued with firms responding “yes” to this question (Question A1). BBC instructed interviewers that “doing work” included trying to sell this work.

Verification of for-profit business status. The interviewer also asked whether the organization was a for-profit business as opposed to a government or not-for-profit entity (Question A2). Interviewers continued with firms responding “yes” to this question.

Confirmation of main line of business. Firms were asked to confirm industry classification from the D&B database (Question A4). Firms could also change or clarify this description. (After the survey was complete, BBC coded the new information on main line of business into appropriate SIC codes.)

Sole location, or multiple locations. Because the study team surveyed business establishments, business owners and managers were asked if they had other locations in Idaho (Questions A5–A6). They were also asked if the establishment was an affiliate or subsidiary of another firm (Questions A8–A9). (A discussion of how BBC consolidated this information into a single response for a firm is presented later in this appendix.)

Past bids or work with ITD, local governments and the private sector. The survey inquired about bids for or work on past ITD, local government and private sector transportation projects. This area of questions asked whether the firm had bid or worked as a prime contractor or as a subcontractor or supplier (Questions B1–B12).

Qualifications and interest in future transportation work. Firm representatives were asked about their qualifications and interest in future transportation work. The survey questions asked whether they were qualified and interested in work for ITD and/or local governments. Separate questions asked about qualifications and interest in this work as a prime contractor and/or as a subcontractor (Questions B13–B14).

Largest contracts. Interviewers asked firms to identify the largest transportation-related contract or subcontract they had been awarded in Idaho in the past five years. They were also asked about the largest contract or subcontract that they had bid on in Idaho in the past five years (Questions D2–D4).

Geographic areas. Interviewers asked a series of questions to identify the ITD districts in which the firm could work. (Questions C1–C6).

Ownership. Firms were asked whether they were at least 51 percent owned and controlled by women and/or minorities (Questions E1–E3).

Certification. All firms were asked if they were certified as a DBE by the State of Idaho (Questions E5–E8).

Business background. Several questions collected information on age of the firm (Question D4), 2005 revenues and number of employees (Questions F1–F6). For firms with multiple establishments in Idaho, the survey also asked about revenue and employee numbers for all of these locations.

Comments about the marketplace and doing business with ITD. Near the end of the survey, interviewers asked two open-ended questions concerning general insights on the marketplace (Question G1) and fairness of ITD prime contractor contracting practices (Question G2).

Contact information. The survey concluded by collecting complete contact information for the establishment (Questions H1–H6).

Survey Execution and Performance

Interviewers. BBC instructed BBC and CRI staff to make up to at least five attempts to reach a person at each phone number. This design is intentionally persistent to minimize non-response.

BBC instructed staff to identify and interview an available company representative such as the owner, manager, chief financial officer or other key official who could answer questions about the company's line of business, past contracts, financial and employment figures, interest in work with various clients, and ownership status. The survey effort began in May 2007. BBC collected faxed or e-mailed survey responses through July 2007.

Survey performance. The survey process began with a very large number of business listings for organizations in certain lines of work potentially related to transportation construction and engineering. At the end of the survey analysis process, firms reporting that they are available for, had bid on, or had performed transportation construction or engineering work were included in the database used for the availability analysis.

The survey effort produced a database of 1,296 for-profit firms in Idaho that were in the lines of business pertinent to the survey and reported they did work related to transportation construction, maintenance or design. This data set is comparable in size to data typically used in economic or other social science research.

Valid business listings. Some of the businesses BBC attempted to survey were:

- Duplicate numbers (664 listings);
- Non-working phone numbers (1,160 listings); or
- Wrong numbers for the desired businesses (397 listings).

Figure C-1, on the following page, shows how the beginning set of 9,402 listings was reduced to 6,821 because of these factors. Some non-working phone numbers and some wrong numbers for the desired businesses reflect firms going out of business or changing their names and phone numbers between the time that they listed them in the corresponding database and the time when the study team attempted to contact them.

Figure C-1 also shows the final disposition of the 6,821 business establishments that BBC and CRI attempted to contact:

- Slightly fewer than 15 percent of these business establishments could not be reached after a minimum of five phone calls (986 establishments). Call-backs to these business establishments were made at different times of day and different days of the week in order to maximize response.
- About 17 percent of these business establishments could not provide a staff member to answer the survey after a minimum of five phone calls (1,190 establishments).
- Surveys were only conducted in English. A very small fraction of one percent of business establishments could not communicate with the interviewer due to language barriers (19 establishments).
- Fourteen percent refused to participate in the interview (973 establishments).
- About 9 percent asked the study team to send the survey via fax or e-mail but did not successfully obtain the fax or e-mail (after multiple attempts) or received the survey but did not return a completed survey to BBC (595 establishments).

In sum, BBC obtained completed surveys from 3,058 business establishments, or about 45 percent of the business establishments with valid phone listings. This level of response to a business survey is relatively high. The very large number of responses and the high response rate add to the statistical validity of the study.

Figure C-1.
Disposition of
attempts to survey
transportation
construction and
engineering
businesses

Note:

* After multiple attempts to complete survey.

Source:

BBC Research & Consulting from 2007 Availability Survey.

	Number of Firms	Percent of Business Listings
Beginning list	9,042	
Less duplicate numbers	664	
Less non-working phone numbers	1,160	
Less wrong number/business	397	
Unique business listings with working phone numbers	6,821	
Less no answers*	986	14.46%
Less couldn't reach responsible staff member*	1,190	17.45%
Less language barriers*	19	0.28%
Less refused to answer	973	14.26%
Less unreturned fax/e-mail*	595	8.72%
Firms that completed surveys	3,058	44.83%

Firms that report being available for transportation construction and engineering work. Among the establishments successfully contacted, only a portion is deemed available for any type of ITD transportation construction and engineering work, as explained below:

- About 55 percent of the firms that completed a survey indicated they did not perform transportation construction, maintenance or design work (1,677 establishments). The survey ended when a business owner or manager reported that the business did not do this type of work.
- About 2 percent of the surveyed establishments were excluded because they were an organization other than a for-profit business (50 establishments). Non-profit and public sector agencies were not to be included in the survey as the availability analysis focuses on for-profit firms. The survey ended when a respondent reported that the establishment was something other than a for-profit business.
- About 1 percent of surveyed establishments indicated that they were involved in transportation construction, maintenance or design work but reported main lines of work that were well outside the scope of the Availability Survey (35 establishments). For example, some firms reported that they did transportation construction-related work, but that their primary line of business was single family homebuilding or other specialty outside the scope of the study. Interviewers completed the full survey with these firms. Prior to analyzing results, BBC excluded them from the final data set.
- Another 736 firms were eliminated from the count of firms available for ITD transportation projects because they said they were not interested in either prime contracting or subcontracting opportunities on such projects or because they had no past experience bidding on or working for ITD, local agencies or in the private sector, or because they did not report availability for an ITD district.

After these exclusions, the survey effort produced a database of 560 for-profit firms that were in the lines of business pertinent to the survey and reported they did work related to transportation construction, maintenance or design (see Figure C-2).

Figure C-2.
Screening of completed business telephone interviews for possible inclusion in the availability analysis

Source:
BBC Research & Consulting from
2007 Availability Survey.

	Number of Firms	Percent of Business Listings
Firms that completed surveys	3,058	100.0%
Less no transportation work	1,677	54.8%
Less not a business	50	1.6%
Less line of work outside of scope	<u>35</u>	<u>1.1%</u>
Firms available for transportation work	1,296	42.4%
Less no interest in future work, no past bid/award, or missing geographic scope	<u>736</u>	
Firms available for ITD work	560	

Study team identification and coding of responses from multi-location firms. Multiple responses from different establishments operating under the same firm name were combined into a single, summary case according to the following rules:

- If any of the establishments reported bidding or working on a contract within a particular sector, the firm summary for that variable was coded to an affirmative response for the corresponding sector;
- The types of work (prime contractor, subcontractor, supplier, trucker) that establishments reported were summed to a single variable, again corresponding to the appropriate sector; and
- If any establishment said that it was interested and able to work within one of the six geographic regions (see part C of the survey instrument), the firm summary reflected that geographic scope.

The firm summary variables for contract sizes and Idaho-wide revenue are equivalent to the largest dollar amounts indicated by any of its establishments. The summary number of firm employees in the study area is equal to the largest response of the multiple establishments. Finally, firms with multiple locations were recoded as woman- or minority-owned, DBE, or certified small businesses if any establishment indicated such status.

Statistical Confidence in Results

BBC calculated confidence intervals for the MBE/WBE availability estimates. Because of the large sample relative to the population of firms, BBC employed a finite population correction factor in determining the standard errors and confidence intervals around these estimates from the Availability Survey. The 95 percent confidence interval for MBE/WBE availability across all industries and roles is +/- 1.6 percentage points.

Potential Limitations

The study team explored several possible limitations in its approach to estimating relative availability. These include:

- Assessing relative MBE/WBE availability and not providing a count of all available firms;
- Use of D&B as part of the sample frame;
- Selection of specific SIC codes to define the sample frame;
- Non-response bias; and
- Reliability of answers to survey questions.

Not providing a count of all firms available for ITD work. The purpose of the survey is to estimate the *percentage* of firms available for transportation construction and engineering work that are minority- and women-owned and controlled (i.e., “relative” MBE/WBE availability). The survey provides such information. The survey does not provide a comprehensive listing of every firm available for transportation work and should not be used as such.

The survey approach of measuring relative availability has been approved by federal courts (see, for example, the Seventh Circuit decision on *Northern Contracting*) when considering state implementation of the Federal DBE Program.¹ Use of a survey is recommended as an approach to measuring availability in the USDOT guidance on goal-setting.²

Use of D&B data as part of the sample frame. Dun & Bradstreet provides the most comprehensive private database of business listings in the United States. Even so, this database does not include all establishments operating in the relevant geographic market area:

- **New firms.** There can be a lag between formation of a new business and inclusion in the database. This means that the newest firms are underrepresented in the sample frame. Based on the firms successfully interviewed in the Availability Surveys, newly formed firms are more likely than older firms to be minority- or women-owned, which suggests that MBEs and WBEs might be underrepresented in the final database of surveyed firms.
- **Home-based businesses.** The D&B database is more likely to miss a business working out of the home than a firm with a distinct business office. Small, home-based firms are more likely than large firms to be minority- or women-owned, which again suggests that MBEs and WBEs might be underrepresented in the final survey data set.

Selection of specific SIC codes to define the sample frame. Defining an industry based on specific SIC codes (or NAICS codes) is a standard step when analyzing an economic sector. Government and private sector economic data are typically organized according to these industry codes. As with any such research, there are limitations when choosing the specific SIC codes to define the sample frame for an industry survey.

¹ *N. Contracting, Inc. v. Illinois DOT*, 473 F.3d 715 (7th Cir. 2007)

² USDOT. *Tips for Goals Setting in the Disadvantaged Business Enterprise (DBE) Program* (<http://osdbu.dot.gov/?TabId=133>)

Both of these potential limitations have a negligible effect on the availability analysis. Post-survey comparison of the SIC codes for firms receiving ITD prime contracts and subcontracts found that the lines of work included in the survey accounted for 91 percent of total dollars of ITD work from 2002 through 2006. Surveying firms in additional SIC codes would be unlikely to have a material effect on the availability estimates.

A further limitation to the use of SIC codes to classify businesses, or any other work type classification method, is that some SIC codes are imprecise and overlap with other business specialties. Even though BBC used D&B's own 8-digit SIC codes, D&B does not maintain a detailed 8-digit code for each firm in its database. In addition, businesses often span several types of work, even at the 4-digit SIC code level of specificity. This overlapping makes classifying businesses into a single line of business difficult and imprecise. When firm owners and managers were asked to identify primary lines of business, they often gave broad answers. For these reasons, BBC collapsed many of the SIC codes into broader work categories in the final database of firms available for transportation-related work. This presents a more accurate assessment of MBE/WBE availability by work field than possible at a finer level of detail. However, this approach sacrifices the ability to separate relatively narrow areas of expertise such as guardrail work (which was not possible to obtain from the D&B information).

Non-response bias. Analysis of non-response bias considers whether firms not successfully surveyed are different from those successfully surveyed and included in the final data set for analysis. There are opportunities for non-response bias in any survey. The study team considered the potential for non-response bias due to:

- Survey sponsorship;
- Work specializations; and
- Language barriers.

Survey sponsorship and introduction. Interviewers introduced the survey by identifying ITD as the survey sponsor in order to encourage firms that performed transportation construction and engineering work to participate in the interview. Firms would be less likely to answer somewhat sensitive business questions asked by an interviewer unable to identify the sponsor of the survey. In fact, some firms asked to check with ITD to verify its sponsorship prior to answering the survey.

Analysis of survey refusal rates suggests that sponsorship had an overwhelmingly positive effect on response rates. Only 14 percent of business listings potentially contacted refused to answer the survey.

Work specializations. Businesses in highly-mobile fields, such as trucking, may be more difficult to reach than firms more likely to work out of a fixed office (e.g., engineering firms). This suggests that survey response rates will differ by business specialization.

If all surveyed firms were simply counted to determine relative MBE/WBE availability, this would lead to estimates that relied too heavily on fields that could be easily contacted by telephone. This potential non-response bias is minimal in this study because the availability analysis compares firms within work fields before determining an MBE/WBE availability figure. In other words, the potential for trucking firms to be less likely to complete a survey is less important because the number of MBE/WBE trucking firms completing surveys is compared with total number of trucking firms, not all firms across all fields.

Language barriers. ITD contracting documents are in English and not other languages. The study team made the decision to only include businesses able to complete the survey in English in the availability analysis so to remove language barriers as a potential explanation for any differences in outcomes observed between MBE/WBEs and majority-owned firms.

Individuals who could not communicate in English well enough to complete the survey and could not locate another individual to answer survey questions in English were not captured in the survey research. There were 19 firms out of 6,821 that could not be interviewed due to language barriers. Choosing to conduct the study in English and not translate it into other languages may have a very small effect on the relative number of minority-owned firms that completed the survey.

Response reliability. Firm owners and managers were asked questions that may be difficult to answer, including firm revenues and employment. For this reason, the study team prompted them with D&B information for their establishment when available, and asked them to confirm that information or provide more accurate estimates. Further, respondents were typically not asked to give absolute figures for difficult questions such as firm revenues. Rather, they were given ranges of dollar figures or employment levels.

Availability Data Overrides

To overcome some of the limitations described earlier in this section, the study team utilized information collected in other portions of the study to determine availability status. Data collected outside of the availability survey used to “override” availability response data include:

- ITD contracting records;
- ITD MBE/WBE/DBE status from the Civil Rights Office; and
- D&B business profile information.

The study team used data from these three sources for questions regarding firm ownership, past contracting amounts, contract role, and geographic availability. The study team only overrode an availability response in the analysis when an availability response was missing or when an availability response conflicted with ITD records. The methodology for resolving conflicts in availability response data and ITD records is described in Appendix D.

Summary

“Custom census” approaches to availability that begin with D&B data have been reviewed positively by federal courts. The study team’s methodology for analyzing MBE/WBE availability takes the previous custom census approach as a starting point and added several layers of additional screening when determining firms available for transportation construction and engineering work.

There was no “sampling” from the sample frame in preparing the list of firms to be surveyed. The study team attempted to contact 9,402 business listings. A relatively high proportion of the establishments were successfully contacted, and more than 3,000 business establishments completed the survey.

BBC examined several potential sources of non-response bias. It is possible that MBEs and WBEs were somewhat under-represented in the final database of available firms. However, BBC concludes that this potential under-representation of MBE/WBEs does not significantly affect the analyses.